Urban Sprawl's Drivers in Iran

Los conductores de la expansión urbana en Irán

DOI: 10.20868/tf.2019.15.4000

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Fecha de Avance de tesis doctoral: 28.11.2018
Director de tesis: Inmaculada Mohino Sanz

Resumen

La expansión urbana como una expansión discontinua, planificada o no planificada, ilimitada y discontinua en áreas periféricas de las ciudades se considera tradicionalmente uno de los desafíos globales. Irán se ha enfrentado a la expansión urbana en las últimas cuatro décadas. El presente estudio ha tenido como objetivo revisar y comparar la literatura relevante en países desarrollados y en desarrollo para estudiar los impulsores de la expansión urbana en particular, como los más importantes en Irán, un país en desarrollo en el Medio Oriente. En consecuencia, se ha encontrado que los procesos de urbanización y, particularmente, las condiciones socioeconómicas afectaron las áreas de desarrollo urbano en Irán. Según los hallazgos de estudios anteriores, la urbanización rápida, las políticas de tierras y las deficiencias en el sistema de planificación son los impulsores más influyentes de la expansión urbana en Irán, considerando que estos impulsores trabajan juntos en lugar de trabajar en líneas separadas.

Palabras clave

Desarrollo discontinuo, planeamiento, límite de crecimiento urbano, expansión urbana

Abstract

Urban sprawl as a low-density, planned or unplanned, unlimited and discontinuous expansion in peripheral areas of the cities is traditionally considered one of the global challenges. Iran has confronted with urban sprawl over the past four decades. The present study aimed to review and compare the relevant literature in developed and developing countries in order to study the drivers of urban sprawl particularly, the most crucial ones in Iran as a developing country in the Middle East. Accordingly, it was found that the processes of urbanization and particularly socio-economic conditions affected urban development areas in Iran. Based on the findings of previous studies, fast urbanization, land policies, and shortcomings in the planning system are the most influential drivers of the urban sprawl in Iran considering that these drivers work with each other instead of working in separated lines.

Keywords

Discontinuous development, master plan, urban growth boundary, urban sprawl

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1. Introduction

Studying the causes of urban sprawl necessitates defining the "urban sprawl" although there is no unique definition despite the considerable literature on the topic. Ewing (1997) described urban sprawl as a lack of residential accessibility, low density, discontinues urban development, and the lack of public open spaces or significant centers. In addition, Sierra Club (1998) defined urban sprawl as *"low-density and automobile-depended development beyond the edge of service and employment areas".*

Further, Bruchell and Galley (2003) expressed low density and dispersed development as the main indicators of urban sprawl. According to the report by the European Environment Agency (as cited in Ludlow, 2006), urban sprawl refers to as "the physical pattern of low-density expansion of large urban areas, under the market conditions, mainly into the surrounding agricultural areas". Furthermore, Bahatta (2010) discussed the process of development and a certain form of land use.

Therefore, based on different definitions of the urban sprawl, the concept is assumed to be limited by the background and approach with regard to different geographical, social, and economic circumstances. More importantly, there is a shortage in the definition of urban sprawl in developing countries regarding the socio-economic and cultural conditions since most studies have only focused on the developed countries. Therefore, the following definition by Masoumi (2012:17) is considered for these specific contexts which are the real focus of the current study.

"Planned and unplanned automobile-oriented urban growth with the lack of public facilities and uses, public social open spaces, and relatively low population density which is due to the fast urbanization, as well as poor growth control and automobile-oriented planning".

Despite the attempts to find a precise definition of the urban sprawl, previous studies focused on measuring the intensity of urban sprawl, along with its causes and negative impacts in both developed and developing countries. Urban sprawl has recently received the attention of scholars, especially in the Middle East countries. Balaban (2012) investigated the impacts of urban planning decision due to the issued laws and deregulations in boom construction and urban sprawl in Turkey during 2003-2006. Additionally, Kuckmehmetoghlu et al. (2009) studied the urbanization structures during the republic era by measuring the land use changes by employing the aerial images and remote sensing in order to determine the effects of urban sprawl on the surface water resource of the Istanbul basins. In addition, Abdulaal (2012) believe that urban sprawl is generated by the formal subdivision, as well as the informal land development due to the rapid urbanization and land speculation by the inefficient urban planning system in most Saudi cities.

More recently, several studies evaluated the urban sprawl and proved its negative impacts on landscapes and natural resources in different cities of Iran (e.g., Sarvestani et al., 2011; Shahraki Zangane et al., 2011; Mohammadian-Mosammam et al., 2017; Soltani et al., 2017)

However, only a limited number of studies have addressed the causes of sprawl in developing countries including Iran (e.g., Hosseinei et al., 2018; Bagheri et al., 2018). Further, Masoumi et al. (2018) evaluated the common drivers of urban sprawl in Iran and Egypt and categorized the drivers of urban sprawl into demographic and planning-related groups. Based on their study, demographic drivers per se cannot be considered as the actual causes of the urban sprawl. In other words, a correlation may be observed between the demographic factors and sprawl in the Middle East. Therefore, compared to the western scientific studies regarding the urban sprawl, our knowledge is

limited concerning the Middle Eastern countries since most scholars have focused on evaluating its intensity or negative impacts on the environment. Being aware of this lack of understanding on the causes behind the urban sprawl in developing countries, the current study seeks to fill this gap by delving into different mechanisms and conditions in developing countries which shape new discontinuous development areas beyond the cities or in the edge of the metropolitan areas.

To this end, Iran is considered the case study since the cities of Iran have encountered with the urban sprawl phenomenon, especially since the 1970s (Bagheri et al., 2018). Thus, to make the best decisions respecting the urban sprawl in Iran, it is necessary to consider its leading causes based on different types of societal, spatial, and economic conditions. Therefore, the present study aimed to identify the drivers of the urban sprawl in Iran by reviewing the literature related to urban development and the structure of urbanization during the five decades, which provides a framework for further studies based on different sizes of the cities related to the urban sprawl indicators in Iran. Furthermore, it is helpful for decision makers and the government to present the required policies. Additionally, the current study aimed to clarify the differences between the causes of urban sprawl in Iran and the western countries in order to determine the local policies and solutions for the government and decision makers who deal with urban sprawl in Iran.

The organization of the remaining sections is as follows. Section 2 discusses the most relevant conclusions regarding the urban sprawl in the literature of western countries. In addition, the methodological approach followed in the study is provided in Section 3. Further, Section 4 summarizes the findings based on reviewing the related literature concerning the drivers of urban sprawl. Finally, the main findings of the study and conclusion are presented in Section 5.

2. Theoretical Framework

Based on the review of the literature, a number of drivers respecting the urban sprawl are provided in Figure 1. A handful of academic researchers attempted to discuss several factors affecting the urban sprawl and reported “economic factors” based on capitalism and the rise of individual benefits, “demographic factors”, “urban planning system”, along with “technology” as the most influential factors of the urban sprawl in the western world (e.g., Ewing, 1997; Glaeser et al, 2004; Ludlow, 2006; Brugman, 2005). For instance, Ewing (1997) discussed consumer preference, technological innovation, subsides in addition to public and quasi-public goods related to the economic, planning system, and technology factors as the drivers of the urban sprawl. Further, Couche et al. (2007) evaluated the causes of sprawl in European countries using a historical approach. They argued that high dense cities are formed due to the industrialization process and the consequent migration of the population from the country to the cities. This high density made urban areas unsuitable for living. Therefore, anti-urban approach created new development areas beyond the cities and technology innovations were allowed to commute in long distances. In the above-mentioned period, innovation in commuting the technology helped low- and middle-income individuals to live in far distances from their workplaces. Furthermore, a transition from the traditional family structure to a modern family with a smaller size of the household and more demand for living places, along with the urban planning system by using zoning and single-use developments led to the urban sprawl in the developed countries (Buzar et al., 2007). Additionally, Brueckner (2000) argued the economic issues as one of the crucial factors in the proliferation of urban sprawl while Glaster et al. (2004) emphasized on car dependency trend as the main effective driver of the urban sprawl. In addition, Brugman (2005) reported various drivers of the urban sprawl

such as technology, automobile, zoning, market, and the like among which the increasing affluence and political democratization were closely related to the sprawl.

According to the report by the European Environment Agency and the Swiss Federal Office for the Environment (2016), the drivers of urban sprawl are divided into demographic, socio-economic, political, and technological categories. Further, Bahatta (2010) considered population and economic growth, speculation activities, property tax, regulations, government development policies, the transition of family structure, transportation, and the road width as the most influential drivers of the urban sprawl.

Categories of factors	Drivers	Explanations	sources
Economic	Speculations Household income Housing investment	High price of land and housing in the inner areas Increase purchasing power Housing economy	Ewing, 1997; Bruckner, 2000; Bontije, 2002; Buzar et al., 2003 Bresson et al., 2004; Brugman, 2005; Bhatta, 2010)
Demographic	Population growth Population transition	Population growth due to natural growth and immigration Smaller household size, less and late marriage age, rising the number of people living alone, destruction of traditional family structures	(Beck et al., 2003; Buzar et al., 2007; Bhatta, 2010.
Planning System	Urban development policies and laws Master plans and zoning regulations Social housing policies	Tax policies for different urban areas Lack of/ inefficient planning and control mechanisms of development outlines Provision of land and housing by government	Ewing, 1997; Bruckner, 2000; Barnes et al. 2001; Bhatta, 2010.
Technology	Technological advancement in communication	Development of communication networks (transportation) Construction of Highways and infrastructures Development of IT infrastructures	Ewing, 1997; Glaeser et al, 2004; Bhatta, 2010.

Figure 1. Conceptual framework of urban sprawl casual model
Source: Author's own

3. Method

The present study was based on the content analysis of different research papers, government reports, and books. Furthermore, the search strategy was consistent with four electronic databases including ScienceDirect, Google Scholar, ReseachGate, and Elsevier. The statement “Urban Sprawl” was searched in both review and research article categories from the earliest possible start date-up until May 2018. However, the search was only limited to academic English articles dealing with the drivers of urban sprawl in the western counties, the Middle East, and Iran. Additionally, Persian database and journals were investigated to achieve the best understanding regarding the area under investigation. This part was conducted by employing the data collected from the Persian articles, laws, documents, and master plans. In addition, demographic information was obtained from a ten-year interval official census which was released by the Statistical Center of Iran during five decades. Publications dealing with the causes of urban sprawl were reviewed, scrutinized, and finally, a number of 56 studies were selected which were implemented in western countries and

Iran. A total of 38 studies were retrieved in English and Persian studies in Iran and 18 academic papers, books, and reports were related to the western and Middle East countries. The list of the reviewed studies is presented in the Reference Section. This literature review allowed us to extract the causes of urban sprawl in Iran, followed by a similar categorization as the revision for the western countries in the previous section in order to compare the causes of the urban sprawl among developing and developed countries.

3.1. Iran as the case study

According to Aminian (2012: 515), Iran is the second largest country of the Middle East and the sixteenth country in terms of size in the world, which includes over 81 million inhabitants and is extended over 1,648,195 km² divided into 31 provinces (Figure 3). Tehran is the capital and yet the largest and most-populated city of Iran. Regarding the urban system, Iran does not follow the rank-size model (Figure 2), and Tehran is the first populated city of Iran and its population is twice more than the population of Mashhad, which is the second crowded city.

An increase in the urban population growth changed the structure of urbanization in Iran due to the high rate of natural population growth and a rapid rise in rural-urban migration in the past five decades and considering the expansion of the market economy and gradual opening up of Iranian economy to the world system after the Second World War. Further, the urbanization process created a peculiar pattern of population distribution (Fanni, 2006). Furthermore, as a developing country, Iran suffered from an unbalanced urban network and urban primacy phenomenon. Large land area was added to Iranian cities in metropolitan areas, as well as middle-sized cities (Shahraki-Zanganeh et al., 2011). According to Zali et al. (2016: 56), urban expansion is constantly considered a concern in the planning system of Iran. They claimed that the urban development in Iran follows two different patterns given the historical approach:

- Urban development pattern in the organic model which enlarged the cities during Pahlavi Era (1925-1979). Based on this approach, the pattern of growth remained compact and the changes had an appropriate proportion between the urban growth and organism;
- Another pattern in the non-organic model is related to the late 20th century. In this model, uneven spatial growth is extremely faster than population growth. Today, the urban pattern is regarded as the horizontally-fragmented pattern in Iran.

Metropolitan Area	Population in 2016
Tehran	8,693,706
Mashhad	3,001,184
Isfahan	1,961,260
Karaj	1,973,470
Shiraz	1,733, 033

Figure 2. Population of metroplitan areas, Iran, 2016
Source: Statistical Annual Book of Iran, 2016, https://www.amar.org.ir/

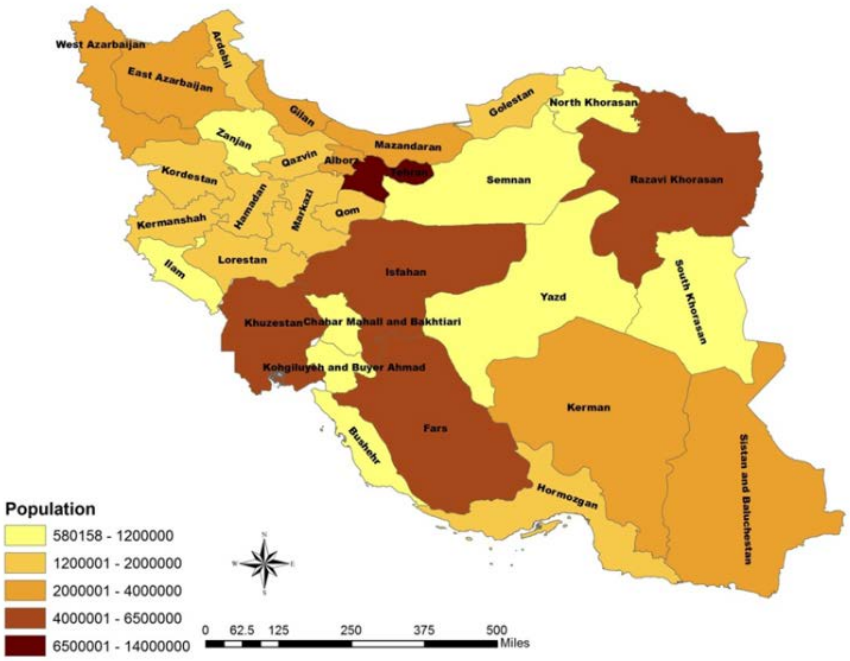

Figure 3. Provinces of Iran by Population ,2016
Source: author's illustration based on Statistical Annual Book of Iran, 2016

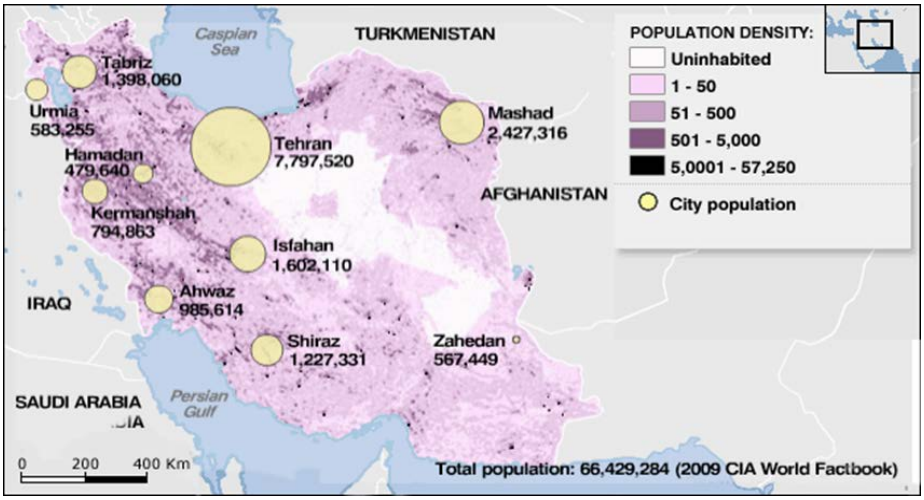

Figure 4. Population Density, Iran, 2009
Source: CIA World Factbook, www.citypopulation.de

4. Drivers of urban sprawl in Iran

Investigating the literature relevant to the urban sprawl in Iran indicates that the studies have mainly focused on measuring the urban sprawl while research about the contributing factors of the urban sprawl is rare. Figure 5 summarizes the studies related to urban sprawl in Iran and the related influential factors.

Categories of factors	Drivers	Explanations	sources
Economic	Land Policies Speculations Housing Investment	Lands selling Land speculation Land and housing market Reducing land price in suburbs Governmental subsides	Masoumi et al. 2018; Hosseini et al. 2018; Mirkatouli et al. 2018; Shahraki-Zanganeh, 2011; Hosseini, 2013
Demographic	Population growth Fast urbanization	Natural population growth Rural-urban migrations Risen number of household Transition of traditional families to modern	Masoumi et al. 2018; Hosseini et al. 2018; Bagheri et al. 2018; Fathi, 2015; Shahraki-Zanganeh, 2011; Fanni, 2006; Abbaszadegan et al. 2008
Planning system	Urban growth boundaries Policies Master plans Urban development	Weak control over illegal constructions Shortcoming in implementations of master plans Inefficient master plans particularly in anticipating intensity and direction of urban growth Lack of regional plans Lack of regeneration plans in traditional core of cities	Masoumi et al. 2018; Hosseini et al. 2018; Shahraki-Zanganeh, 2011; Parsi et al. 2014; Ghorbani et al. 2013; Meshkini et al. 2011; Abbaszadegan et al. 2008
Technology	Transportation Modern life style	Improvement in transportation's infrastructures Dominant of private car in commuting Increasing motor ownerships Preference of consumer	Masoumi et al. 2018; Hosseini et al. 2018; Masoumi, 2014; Masoumi, 2012; Poor Ahmad et al. 2011

Figure 5. Conceptual framework urban sprawl casual model in Iran
Source: Author's own

4.1. Urbanization and Urban Population Growth

During the 1970s, Iran faced rapid urbanization. As reported by Fathi (2015), the Census released in Iran demonstrated that the proportion of urban population to the total population increased from 31% in 1956 to 74% in 2011. Thus, the urban population of Iran drastically rose more than two times over 50 years. Such a rise in urban population corresponded to natural urban growth and rural-urban migration (Fanni, 2006). As shown in Figure 6, the annual urban population increased while the rate of annual rural population decreased in 1956-2011. Additionally, boom urbanization in Iran is affected by several factors such as transfer from the economy agrarian to the industry, further opportunities and amenities in the cities, as well as more investigation in the cities, the arrival of modernity to Iran, and the Land Reform Act which destroyed the traditional agrarian structure of Iran and persuaded the farmers to migrate to the cities.

Iranian urban system has been under the influence of capitalist relations since the 1960s. The "Land Reform Act (16/06/1960)" was passed by Mohamadreza Pahlavi (the last king of Pahlavi's dynasty) in order to reach the capitalist (Esfahani-Salehi et al., 2008) by the "Land Reform" after the redistributing agricultural land away from large landlords. Therefore, more than 45% of the farmers who were paid by the landowners became unemployed and thus were pushed to move into the cities (Lahsaeizade, 1987). This reformation law was a part of the process of transferring the economy from a largely agrarian base to the one mainly oriented toward the industry service. According to this Act, the traditional pattern of ownership in Iran was destroyed. Individual farmers were not supported by the government, and they could not adjust to the new system. Thus, they lost their jobs. As demonstrated in Figure 6, the urban population continuously grows during 1956-2011 while the rural population has a sharp decline by increasing economic and social differences, as well as the inequalities among the cities or between cities and villages.

Along with the rural-urban migrations, the global price of oil increased in 1973, which was followed by an increase in the government revenue. Therefore, the government had more resources to invest in the cities and metropolitan areas. Accordingly, new budgets were allocated to constructing the roads and highways, extending the infrastructures, and improving the amenities of the cities since moving from agrarian economy to the industry service required substantial improvements in infrastructure and public services. As a result, the urban trend led to further migrations from rural areas to the cities and thus city expansión.

	Population	Urban Population	Rural poulation	Propotion of Urban population to total Population	Annual Growth of Population(%)	Average annual urban growth (%)	Average annual rural growth (%)
1956	18,954,704	6,002,62	12,952,083	31.4	-	-	-
1966	25,788,722	9,795,810	15,922,912	38	-	-	-
1976	33,708,744	15,854,800	22,600,449	47	3.9	2.4	1.8
1986	49,445,010	31,836,598	24, 000,565	54.3	2.5	5.1	1.2
1996	60,055,488	36, 817,786	23,237,699	61.3	1.6	3.4	-.64
2006	70,495,782	48, 259,964	22,235,818	68.5	1.9	2.9	-.44
2011	75,149,669	53,646,661	21,446,783	71.4	1.29	2.1	-.63

Figure 6. Demographic information, Iran 1956-2011
Source: Statistical Annual Book of Iran, 1956-2011, https://www.amar.org.ir/

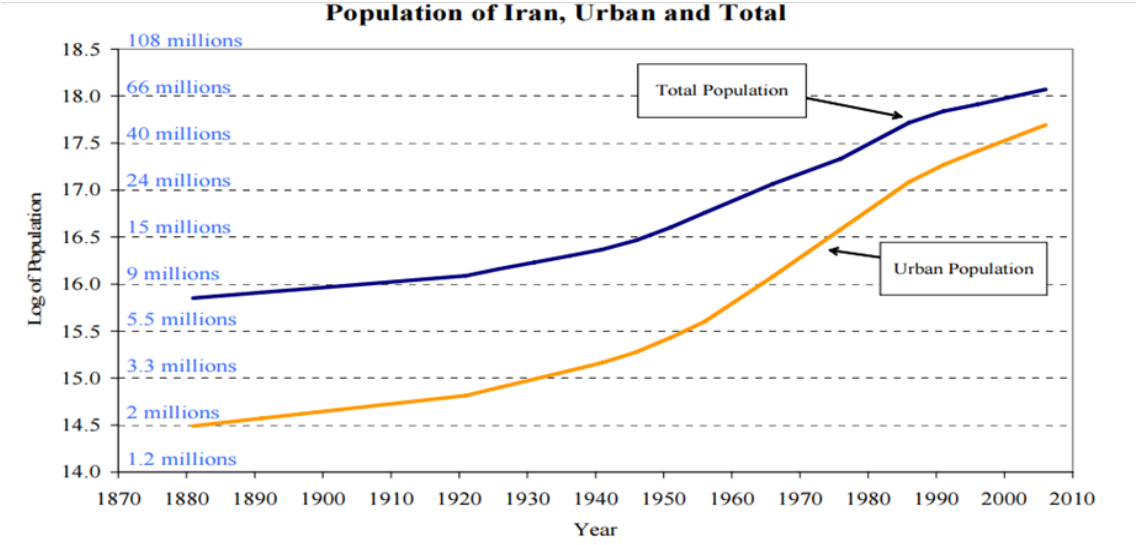

Figure 7. Iran Population in comparison with urban population
Source: Esfahani Salehi et.al (2009: 205)

In addition, family structures, as well as the urban population growth, were changed by modernization. Figure 8 represents traditional families who transformed into modern families with smaller household size. Further, the growth of the young population caused an increase in the number of marriage and the creation of new households. The number of Iranian households who lived in the cities sharply increased from 1 million in 1956 to 15 million in 2011.

	Population	The Number of household in the cities	The household size in the cities
1956	18,954,704	1,261,372	4.7
1966	25,788,722	1,960,701	5.0
1976	33,708,744	3,265,524	4.9
1986	49,445,010	5,528,542	4.9
1996	60,055,488	7,943,189	4.6
2006	70,495,782	12,405,584	3.9
2011	75,149,669	15,427,848	3.5

Figure 8. The Houshold size in Iran, 1956-2011
Source: Statistical Annual Book of Iran, 1956-2011, https://www.amar.org.ir/

The above-mentioned factors provided new demands for housing and led to newly developed areas in the cities. The lower price of the housing and land in the urban fringes shaped a dispersion pattern of newly developed areas compared to the higher price in the inner areas.

4.2. Planning system and economic forces

Land selling and transferring by the government were the factors which exacerbated the urban expansion of the cities in Iran aiming at supporting low or middle-income individuals to accommodate in their own homes. Different studies argued the role of land selling policies expanding the cities in Iran (e.g., Masoumi et al., 2018; Hosseinei et al., 2018; Bagheri et al., 2018; Shahraki Zanganeh et al., 2011). The majority of the transferred lands were of agricultural type on the periphery of the cities, which resulted in increasing in the price of agriculture lands and speculative activities. For example, the government occupied one million square meter lands in Tehran since 1979 (Equilibrium plan to Tehran, 2007) and various towns (Shahrak) around Tehran were built in order to promote home ownership for the middle class (Masoumi et al., 2018).

In the pre-Islamic revolution, most of the new cities were constructed to settle industrial, as well as low-income and mid-income workers. According to Soleymani et al. (2013), after the Islamic revolution, the plans for the new cities followed two main aims as follows.

- Decentralizing from metropolitan areas and attracting extra urban population
- Transferring several factories beyond the metropolitan area and houses of their workers

In order to achieve the above-mentioned aims, most of the new cities were located in a distance of 20-40 kilometers from the metropolitan areas and this short distance to the main city caused leapfrog developments. The experience of the new cities in Iran indicated that these cities failed to succeed in attracting the expected population based on the independent city and thus resulted in increasing the number of dormitory cities. Furthermore, factories were located on the edge of the intercity roads, which discontinuously shaped the residential areas by workers who tended to accommodate in the dormitories of the cities closer to the metropolitan areas (Hatminejad et al., 2013).

Additionally, "land market" was another serious factor related to the land speculation in Iran which persuaded the urban expansion. The housing and lands were regarded as a high-value investment in Iran. The price of the lands had initiated to increase since several decade. Therefore, land speculation in the edge of the cities or closer distance beyond the cities was considered the inevitable outcome of the lack of policies concerning the brownfields in the inner cities.

"Mehr Housing Program" was an example of the planning policy for providing housing for low-income households. However, the location of the projects outside the cities or in the suburbs was one of the drawbacks of this program while ignoring the brownfields and the capacity of development inside the cities. Accordingly, the dispersed pattern of small and medium-sized cities was influenced by the plans as a result of government decision making (Ghanbari, 2013).

In the post-revolution era, master plans played a significant role in the urban expansion of cities in Iran although the inconsistency in predicting the expansion of the city was regarded as the main aspect of failure in such plans. Iranian cities have two urban growth boundaries called "Mahdoodeh-e-Shahr" and "Harim-e-Shahr". City growth is limited to the boundary of "Mahdoodeh-e-Shahr" (first growth boundary), and this area is under the control of the municipality.

In addition, all the urban services and facilities are provided by the municipality which is located in this area. Further, this boundary determines the current urban district with the growth limitation for the next twenty years. The second growth boundary, namely, "Harim-e-Shahr" includes the lands which are located next to "Mahdoodeh-e-Shahr". The first one is a forbidden zone for construction. However, in some cases, predicting the population growth in master plans had significant differences in reality. For instance, the population was lower than the predictions. Thus, planners considered a large area as a "Mahdoodeh-e-Shahr". Therefore, several rural areas located in "Mahdoodeh- e-Shahr" joined the cities and shaped the urban sprawl. Furthermore, placing some villages in "Harim-e-Shahr" increased the price of the lands and land speculation. As a result, encouraging the farmers to convert agricultural land into other usages resulted in illegal constructions.

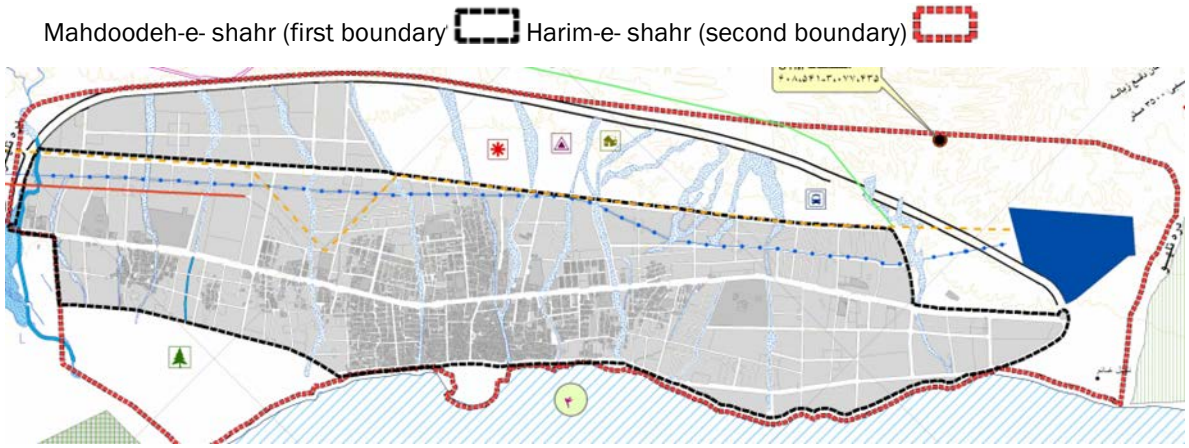

Figure 9. Two growth boundaries in Kangan/Iran
Source: Maab Consulting Engineers, (2007:98)

Additionally, city expansion in Iran has always been confronted with the lack of control on master plan practices based on the offered proposals. In addition, there is no unique administrative system for preparing, approving, and implementing the construction projects. In fact, the municipalities are

in charge of implementation without playing any role in the preparing processes. Further, the shortcoming in the connection between different parts of the administrative system leads to the unacceptable practice of master plans in Iran. Furthermore, the process of providing and approving master plans takes a long time. Thus, they cannot adapt to new changes in the cities (Zista Consulting Engineers, 1993).

Another factor related to the weakness of these master plans is that they need to fund the plans based on sustainable finance resources although municipalities are responsible for implementing the master plans and inspecting the urban growth boundaries like the executors. Municipalities rely on their budget and funds. Masoumi et al. (2018) declared that levies on the building and land are considered as one of the main sources of revenue for the municipalities, leading land speculation, unwanted growth in the marginal lands, and unauthorized density. Briefly, municipalities receive the fines and taxes in the exchange for allowing the private sector to build some urban facilities and large-scale projects outside the city borders (Shahraki Zanganeh et al., 2009).

Additionally, the lack of efficient spatial plans due to regional advantages and proper distribution of the cities in the residential network of Iran, along with regional inequalities and fast urbanization caused the urban primary in Iran. In addition, population distribution unbalanced the pattern, leading to the occurrence of inter-migration (i.e., from the rural-urban and small city to the metropolitan area). Therefore, metropolitan areas confronted with uneven and unlimited expansion.

4.3. Technology

Car dependency and urban sprawl are believed to be interrelated. Car manufacturing in Iran was initiated later than the western countries and has recently reached mass production. Further, the rate of car ownership has recently increased, along with the low price of fuel and low commuting cost in Iran (Masoumi et al., 2018; Poor Ahmad et al., 2006). Private car owners refuse to pay the true cost of driving. Furthermore, the air pollution and traffic congestion are increased by the automobiles while the Iranian municipalities fail to receive a considerable amount of revenue by taxes and levies from the traffic jam (Economic World, 2015). Additionally, the development of transportation networks and the construction of highways and road have recently increased (Masoumi, 2014; Allen, 2013). Thus, new Iranian neighborhoods are more car-dependent compared to the traditional ones.

The early years of Pahlavi dynasty manifested the emergence of modernity in Iran. The government policies during those years led to major changes in the cities of Iran. The construction of the streets was one of the most obvious impacts of such modernity before which the concept of the street was not regarded as a dominant structure of traditional cities. Adding the streets as the main conceptual aspects of a city such as Paris in the Housman period changed the traditional compact cities and neighborhoods in Iran (Poor Ahmad et al., 2011). The Iranian historical city cores were like dead-end alleys with curvy main routes connecting the neighborhoods to each other (Masoumi, 2012). At present, there is an outer trend to replace the neighborhoods in the cities of Iran. In addition, Iranians tend to accommodate in new buildings located in the neighborhoods close to the city center. Therefore, the core of cities has lost its roles during this time. Finally, low-quality urban fabrics, the lack of amenities, high price of constructing infrastructure, and poor accessibility persuade a wide variety of people to move from their old neighborhood to the new attached areas on the periphery of the cities.

5. Conclusion

In general, the present study compared the drivers of urban sprawl between the western countries and Iran as a developing country. Based on relevant urban sprawl studies conducted in Iran, no significant difference was observed between the causes of urban sprawl in Iran and developed countries while their process and mechanism were different. For instance, the economic, technology, and planning system, as well as the demographic structure are considered the well-known factors for urban sprawl around the world whereas they have different mechanisms in different parts of the world. Although expanding the economic prosperity promoted Americans to live in long distances from their workplaces, finding more opportunities persuaded Iranian farmers to migrate to the cities. Further, they were pushed to live in the areas beyond the cities since they were unable to afford to live in the main cities.

Based on the relevant studies, various factors were highlighted as the drivers of urban sprawl in Iran such as fast urban population growth, the lack of integrated urban management, inefficient master plans, a rise in the prices of land and housing in urban service boundaries while low price of the lands in periphery areas, and finally, the inadequacy of a monitoring system for illegal construction in areas other than the cities. Furthermore, the above-mentioned drivers of the urban sprawl should be taken into consideration in the related and interacted model. Additionally, a weakness in the planning system, along with political fragmentation and fast urbanization simultaneously, led to urban sprawl in Iran. Accordingly, none of these factors can be separately regarded as a casual driver of the urban sprawl. In other words, these drivers should be considered in a multi-influential model which provides a framework for decision makers and urban planners in the urban sprawl of the developing countries.

In conclusion, urban sprawl is regarded as one of the controversial issues in Iran which urban planners and decision makers have recently dealt with. Therefore, establishing policies to control the urban sprawl requires the determination of its influential drivers. Eventually, future research is recommended to investigate whether urban sprawl and its factors are the same or not in different cities of Iran.

Referencias

ABBASZADEGAN, M, YAZDI, B.R. (2008). Utilization of smart growth in organizing urban sprawl. Journal of Technology of Education, 3, 33-48

ABDULAAL, W.A. (2012). Large urban developments as the new driver for land development in Jaddah. Habitat International, 36, 36-46. DOI: 10.1016/j.habitatint.2011.05.004

ALLEN, H. (2013). An integrated approach to public transport, Tehran, Islamic Republic of Iran. Global Report on Human Settlements

ALI AGHAZADEH, R.F, SHORKGOZAR, A. (2015). Review and evaluation of the urban development plans in Iran case study: the third master plan in Rasht, 1th National Conference on Earth Sciences and Urban Development

AMINIAN, A. (2012). Environmental performance measurement of tourism accommodations in the pilgrimage urban areas: the case of holy city of Mashhad, Iran. Procedia-Social and Behavioral Sciences, 35, 514-522. DOI: 10.1016/j.sbspro.2012.02.117

BAGHERI, B, NEDAE TOUSI, S. (2018). An explanation of urban sprawl phenomenon in Shiraz metropolitan area (SMA). CITIES, 73, 71-90. DOI: 10.1016/j.cities.2017.10.011

BECK, R, KOLANKIEWICZ, L, CAMAROTA, S. A. (2003). Outsmarting smart growth: population growth, immigration, and the problem of sprawl. Washington, DC: center for immigration studies.

BHATTA, B. (2010), Causes and consequences of urban growth and sprawl; analysis of urban growth and sprawl from remote sensing data. Springer, Berlin, Heidelberg, 17-36. DOI:10.1007/978-3-642-05299-6_2

BALABAN, O. (2012). The negative effects of construction boom on urban planning and environment in turkey: unraveling the role of the public sector. Habitat International, 36, 26-35. DOI:10.1016/j.habitatint.2011.05.003

BOSKER, M, MARLET, G. (2006). Urban growth and decline in Europe. Discussion paper series/Tjalling C. Koopmans Research Institute, 6(18)

BONTIJE, M. (2001). Dealing with Deconcention: population deconcentration and planning response in polynucleated urban regions in north-west Europe. Urban Studies, 38(4), 769-785. DOI:10.1080/00420980120035330

BRESSON, G, MADRE J.L, PIRROTTE, A. (2004). Is urban sprawl stimulated by economic growth? A hierarichical bayes estimation on the largest metropolitan areas in France. 10th World Conference on Transport Research, Istanboul, Turkey.

BRUECKNER, J.K. (2000). Urban sprawl: diagnosis and remedies. International Regional Science Review, 23(2), 160-171. DOI:10.1177/016001700761012710

BRUGMANN, R. (2005). Sprawl: A compact history, Chicago, University of Chicago press

BURCHELL, R, GALLEY, C. (2003). Projecting incidence and costs of sprawl in the united states, Transportation Research Record, 1831. DOI:10.3141/1831-17

BUZAR, S, OGDEN, P, HALL, R, HAASE A, KABISCH, S, STEINFUHRER, A. (2007). Splintering urban populations: emergent landscape of reurbanisation in four European cities. Urban Studies, 44(4), 651-677. DOI:10.1080/00420980601185544

City population statistics, CIA World Factbook, (23 April 2010). www.citypopulation.de, GlobalSecurity, 1996 Iran Census, Petroleum Economist, Times Atlas

COUCH, C, LEONTIDOU, L, PETSCHEL, H. G (2007). Urban sprawl in Europe; landscapes, land-use change and policy, Blackwell Publishing. DOI:10.1002/9780470692066

CIUB, SIERRA. (1998). The dark of the American dream: the costs and consequences of suburban sprawl, challenge to sprawl campaign, College Park, https://www.tamalpais.serraclub.org/transportation/sprawl_report. What.html

Economic World (2015), the monthly newspaper, No.3671, (Decmber 2015). https://donya-e-eqtesad.com/%D8%B1%D9%88%D8%B2%D9%86%D8%A7%D9%85%D9%87-%D8%B4%D9%85%D8%A7%D8%B1%D9%87-3671

ESFAHANI, S.H, PESARAN, M.H. (2009). The Iranian economy in the twentieth century: a global perspective. Iranian Studies, 42(2), 177-211. DOI:10.1080/00210860902764896

Equilibrium plan to tehran, (2007). The National Organization of Land and Housing, http://archive.mrud.ir/UI/555aadd3-0947-4c51-8e39-377578e187b5/Catalogue.aspx?History

European Environmental Agency, Joint EEA-FOEN Report (2016), Urban Sprawl in Europe, ISSN 1977-8449

EWING, R. (1997). Is Los Angeles-style Sprawl Desirable?" Journal of The American Planning Association, 63(1), 107-126. DOI:10.1080/01944369708975728

FANNI, Z. (2006) .Cities and urbanization in Iran after the Islamic revolution. Cities, 23(6), 407-411. DOI:10.1016/j.cities.2006.08.003

FATHI, E. (2015). The urbanization trend in Iran. Amar, 12, 8-15

GALSTER, G, HANSON R, RATCLIFFE, M.R, WOLMAN, H, COLEMAN, S, FREIHAGE, J. (2001). Wrestling sprawl to the ground: defining and measuring an elusive concept. Housing Policy Debate, 12(4), 681-717. DOI:10.1080/10511482.2001.9521426

GHANBARI, A. (2013). Evaluating location of Mehr housing plan in the cities: Tabriz, Marand, and Hadi Shahr. Geographic Space, Iran, 48, 123-145

GHORBANI, R, JAME-E-KASRA, M, MIRZABAKI, M. (2013). Evaluation of spatial adaption ratio on urban comprehensive plans implementation process; case study: Bonab city. Journal of Geography and Urban Planning, 49, 119-216

GLAESER E.L, KAHN M.E. (2004). Sprawl and urban growth. Handbook of Regional and Urban Economics, 4, 2481-2527, Elsevier. DOI:10.1016/S1574-0080(04)80013-0

HATMINEJAD, H, ZAMANAI, Z, HAJINEJAD, S, GAZAIE, M. (2013). Pathology of new town in Iran, Sepehr, 88, 47-57

HADY ZONOOZ, B. (2015). Evaluation of urban plans in Tehran. Haft Shahr, 53-54

HOSSEINI S.H, HAJILOU, M. (2018). Drivers of urban sprawl in urban areas of Iran. Papers in Regional Science, 1-22. DOI:10.1111/pirs.12381

HOSSEINI S.M. (2013). The analysis effective factors on urban sprawl of Mashhad. Master thesis of Geography and Urban Planning Faculty, Tehran University of Iran.

KHAEF, S. (2009). Planning for Sharake Gharb according new urbanism. Dissertation of Master, Urban Planning Faculty, Tehran University of Iran

KAMRAVA, S.M.A. (2005). An introduction to the contemporary urbanism of Iran, Tehran University Press

KUCKMEHMETOGHLU, M, GEYMEN, A. (2009). Urban sprawl factors in the surface water resource basins of Istanbul. Land Use Policy, 26, 569-579, DOI:10.1016/j.landusepol.2008.08.007

LAHSAEIZADEH, A. (1987). Land settlement and cooperatives (FAO). Journal of Land Reform, 1(2)

LUDLOW, D. (2006). Urban sprawl in Europe; the ignored challenge. European Environmental Agency

MAAB Consulting Engineers. (2007). Mahdoodeh&HarimShahr, MaSter Plan of Kangan, Housing & Urbanization Ministry, http://archive.mrud.ir/UI/forms/delivery.aspx?id=ce2b875f-fb36-41fb-a515-4eae0e3abcb7

MASOUMI H.E. (2011). A new approach to the Iranian urban planning; using neo-traditional development. Dissertation of Ph.D., Faculty of Spatial Planning, Technical University of Dortmund

MASOUMI H.E. (2012). Urban sprawl in Iranian cities and its differences with the western sprawl. Spatium, 27, 12-18. DOI:10.2298/SPAT1227012E

MASOUMI, H.E. (2014). A theoretical approach to capabilities of the traditional urban form in promoting sustainable transportation. Theoretical and Empirical Researches in Urban Management, 9(1), 44-60

MASOUMI H.E, HOSSENINI, M, GOUDA A.A. (2018). Drivers of urban sprawl in two large middle-eastern Countries: literature on Iran and Egypt. Journal of Studies and Research in Human Geography, 12(1). DOI:10.5719/hgeo.2018.121.4

MESBAH, S. (2017). Evaluating of location theories of residential tower, Sharake Gharb & Shahrake Ekbatan in Tehran. The 3th International Conferences of Engineering Science, Bangkok, https://www.civilica.com/Paper-ICRSIE03-ICRSIE03_144.html

MESHKINI, A, SAJJADI, J, TAFFAKORI, A. (2011). The impacts of land-grant and government housing policies on spatial expansion of Iran's Cities: case study of Kermanshah, 23, 47-68

MIRKATOULI, J, SAMADI, R, HOSSENEINI, A. (2018). Evaluating and analysis of socio-economic variables on land and housing prices in Mashhad, Iran. Sustainable Cities and Society, 41, 695-705. DOI.org/10.1016/j.scs.2018.06.022

MOHAMMADIAN, M.H, TAVAKOLI, N. J, KHANI, H, TEYMOURI, A, KAZEMI, M. (2017). Monitoring land use change and measuring urban sprawl based on its spatial forms; the case of Qom city. The Egyptian Journal of Remote Sensing and Space Sciences, 20, 103-116. DOI.org/10.1016/j.ejrs.2016.08.002

PARSI H.R, FARMIHANI, F.B. (2014). Analysis of the urban sprawl in the peripheral metropolitan areas case study: northen peripheral areas of Esfahan, Iran, urban studies, 10, 49-62

POOR AHMAD, A, HATAMI NEJAD, H. (2006). Evaluation of urban development plans in the Country. Geographic Researech, 58, 167-180

POOR AHMAS A, FARAJI MOLAEI, A, MANUCHEHRI, A, AZIMI, A. (2011). The influence of modernism into the spatial development of Islamic-Iranian Cities, Shahre Irani-Islami, 47-61

RASOOLIMANESH, S.M, JAAFAR, M, BADARULZMAN, N. (2013). Urban planning and management system in Iran: a review and assessment. Middle East Journal of Scientific Research, 18(2), 220-229

SARVESTANI, M.S, IBRAHIM LATIF, A.B, KANAROGLOU, P. (2011). Three decades of urban growth in the city of Shiraz, Iran: a remote sensing and geographic information systems application. Cities, 28(4), 320-329. DOI:10.1016/j.cities.2011.03.002

SHAHRAKI ZANGANEH, S, HOSSEINI S.M, (2009). Evaluation of the role of urban management institution of Iran after the Islamic revelation in physical development of cities. Shahrdaria Magazine, 9(92), 26-31

SHAHRAKI ZANGANEH, S, SAURI, D, SERRA P, MODUGNO S, SEIFOLDINI, F, POOR AHMAD, A. (2011). Urban sprawl pattern and land use change detection in Yazd, Iran". Habitat International, 35(4), 521-528. DOI:10.1016/j.habitatint.2011.02.004

SHAHRAKI ZANGANEH, S, MAJIDI HERAVI, A, KAVIANI A. (2012). A comprehensive explanation of the causes and factors affecting the urban sprawl; case study: Yazd. Practical Research Geography Journal, 25, 173-193

SOLEYMANI, M, AHMADI FARD, N, RASHIDI E.H, A, SHAHRAKI ZANGANE, S. (2013). The impact of government plans on horizontal development of Tehran City. Geography and Planning Scientific Journal, 52, 185-204

SOLITANI, A, HOSSIENIPOUR, M, HAJIZADE, A. (2017). Urban sprawl in Iranian medium-sized cities; investigating the Role of Masterplans, Journal of Sustainable Development, 10(1), 122. DOI:10.5539/jsd.v10n1p122

Statistical Annual Book of Iran (1956-2011), https://www.amar.org.ir/%D8%B3%D8%B1%D8%B4%D9%85%D8%A7%D8%B1%DB%8C-%D8%B9%D9%85%D9%88%D9%85%DB%8C-C

Statistical Center of Iran, Main web Page, https://www.amar.org.ir/

ZALI, N, HASHEMZADE G., F, ESMAIZADE, Y. (2016). Analyzing urban sprawl of Tehran metropolis in Iran (During 1956-2011). Anuário do Instituto de Geociências 39(3), 55-62. DOI:10.11137/2016_3_55_62

ZANGI ABADI, A, ABDOLLAHI, M, SALEK G., R, GHASEMZADEH, B. (2014). Evaluation of Affecting factors into lack of realization of comprehensive urban plans in Iran and its challenges (case study: master plan of Tabriz). Research and Urban Planning, 18, 41-58

Zista Consulting Engineers (1993). The evaluation of the city comprehensive plans in Iran, Tehran. Planinng & Budgetary Organization press